MUREX

Tradesarc *Dual* 141i

SERVICE MANUAL

1.2.99

MUREX

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INTRODUCTION

The Murex Tradesarc Dual 141i is a small, portable, inverter based power source for MMA or TIG welding using the scratch start method. The unit provides up to 140A welding current and operates from either 230V or 110V single phase AC electricity supplies. The unit contains automatic supply voltage sensing circuitry so that no tap changes are required. The Dual 141i is housed in an all metal enclosure, a small fan at the rear providing cooling for the internal semiconductor components. A thermal sensor built into the unit prevents excessive temperatures should the unit be overdutied and output is disabled and a front panel warning light illuminated under such circumstances.

In combination with an optional TG123V TIG torch and Argon gas supply the Dual 141i can be used for TIG welding of stainless components and the like.

Specification

Input

Mains Supply	23OV or 110V 1 phase 50/60Hz
Power (max)	4.3 KW
KVA (max)	5.3 KVA *
Fusing	16A slow on 230V**
	32A slow on 110V

Output (on 230V supply)

Current Range		10 - 140A dc
Rating	TIG	14OA/16V at 60% duty
		110A/14V at 100% duty
	MMA	12OA/25V at 60% duty
		95A/24V at 100% duty
OCV		70V dc

Dimensions

Length	337mm
Width	146mm
Height	230mm
Weight	8Kg (net)

Standards

EN60974-1 & EN50199

* Generator capacity not less than 6KVA

** A 13A slow fuse is adequate for most applications

INSTALLATION

Radio Interference

Murex welding power sources have been designed to high standards of electromagnetic compatibility. However, arc welding, by its very nature, generates radio-frequency energy and may cause interference. By installing and using the equipment correctly, in accordance with these instructions, the problems of interference may be minimised.

This equipment satisfies the requirements of the EU Directive 89/336/EC on EMC and complies with the limits in EN 50 199, 'EMC product standard for arc welding equipment'. These limits are designed to provide reasonable protection against interference in heavy industrial areas.

If this equipment is used in domestic areas, eg. for repair or maintenance, particular care should be taken. The time of day should be chosen and the duration of welding limited, to minimise any potential problems.

If this equipment caused interference the guidance given below should be considered. If a solution cannot be found please contact your distributor or the manufacturer.

Before installing this welding equipment an assessment should be made of potential EMC problems that may occur. It is good practice not to install welding equipment next to computers or safety critical control circuits, eg electronic machine guards, unless they have been suitably protected.

This equipment should be connected to the primary supply using the cable provided. However, for permanent installation, if interference problems occur, shielded cable or conduit should be considered. The primary cabling and welding cables should be kept separate to other mains wiring and control, signalling or communications leg telephone) cables. If interference occurs then greater separation or re-routing should be considered. Welding cables should be kept as short as practically possible.

Interference may also be reduced by separating the welding equipment from the other equipment affected. A partition, brick wall or particularly, a metal screen will also reduce interference. Earthing and equi-potential bonding should also be considered but guidance should be sought from a competent person, the distributor or manufacturer.

To ensure continued compliance to the EMC Directive this equipment should be routinely maintained according to the manufacturers instructions and using only approved spare parts. In particular, the spark gaps of HF units should be adjusted and maintained according to the manufacturers recommendations.

All access and service door and covers should be closed and properly fastened when the equipment is being used. This equipment should not be modified in any way except for those changes and adjustments approved by the manufacturer.

Connection to the Mains

The Tradesarc Dual 141i can be used on 230V or 110V single phase electricity supplies.

On 230V a standard 13A fuse is adequate for most MMA or TIG welding applications. For higher duty work, with 3.2mm electrodes at 140A for example, A 16A slow fuse must be used.

On 110V supplies a 32A fuse should be used corresponding with a supply of not less than 3KVA.

The unit contains sensing circuiting which automatically adjusts itself to match the mains input supply, 230V or 110V as necessary. No internal adjustments are required.

IMPORTANT!

The green/yellow earth lead must be connected to a good earth ground.

Mains extension leads

Care must be taken when supplying the unit via long mains extension cables. On 230V supplies the recommended cross section of such cables is 2.5mm². On 110V supplies extension cables are not recommended.

Siting the unit

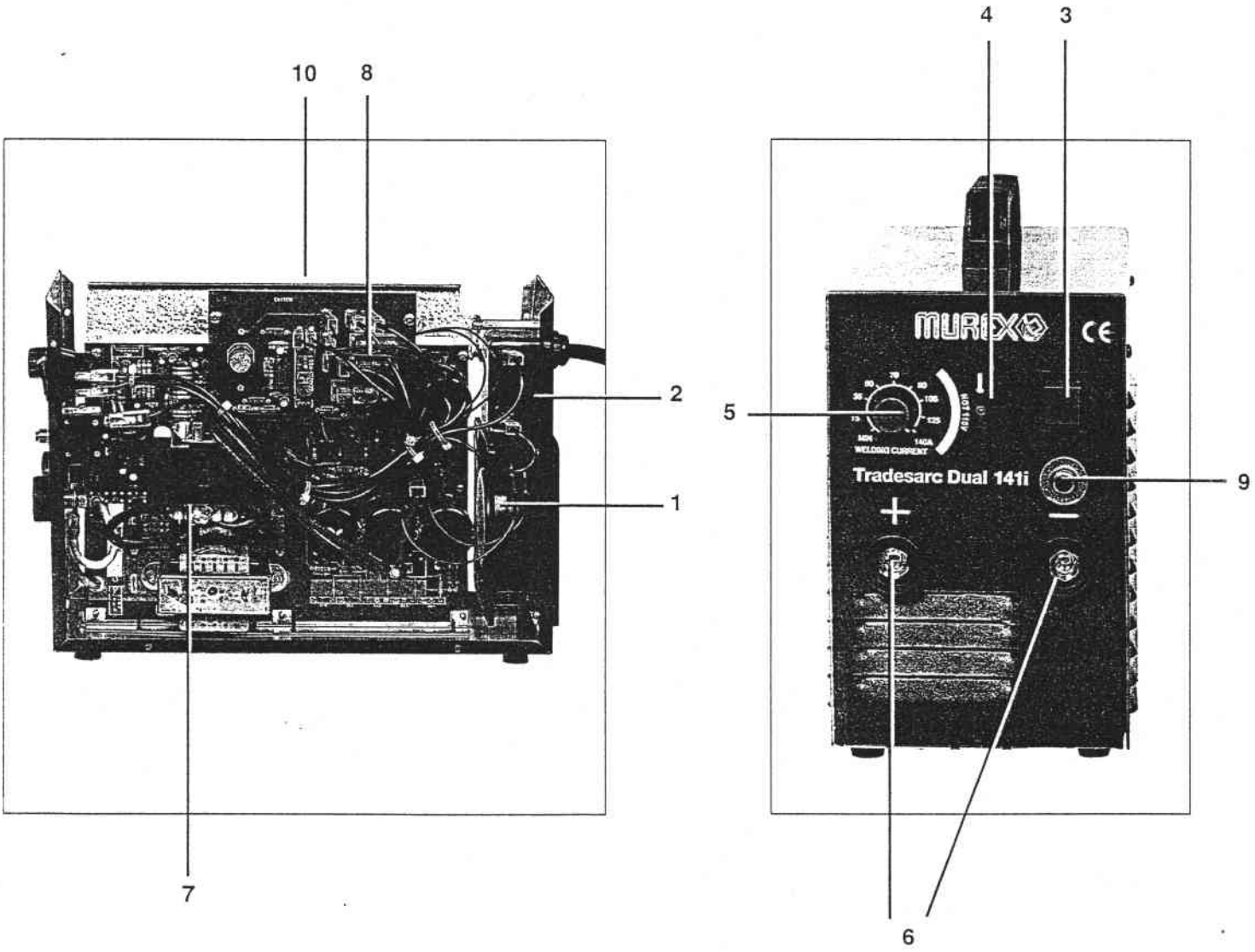
Position the unit to give good all-round ventilation. Do not block the air inlet on the rear panel or the front or side panel louvers. Preferrably choose an off-floor location away from dust, dirt or damp.

Welding Cables

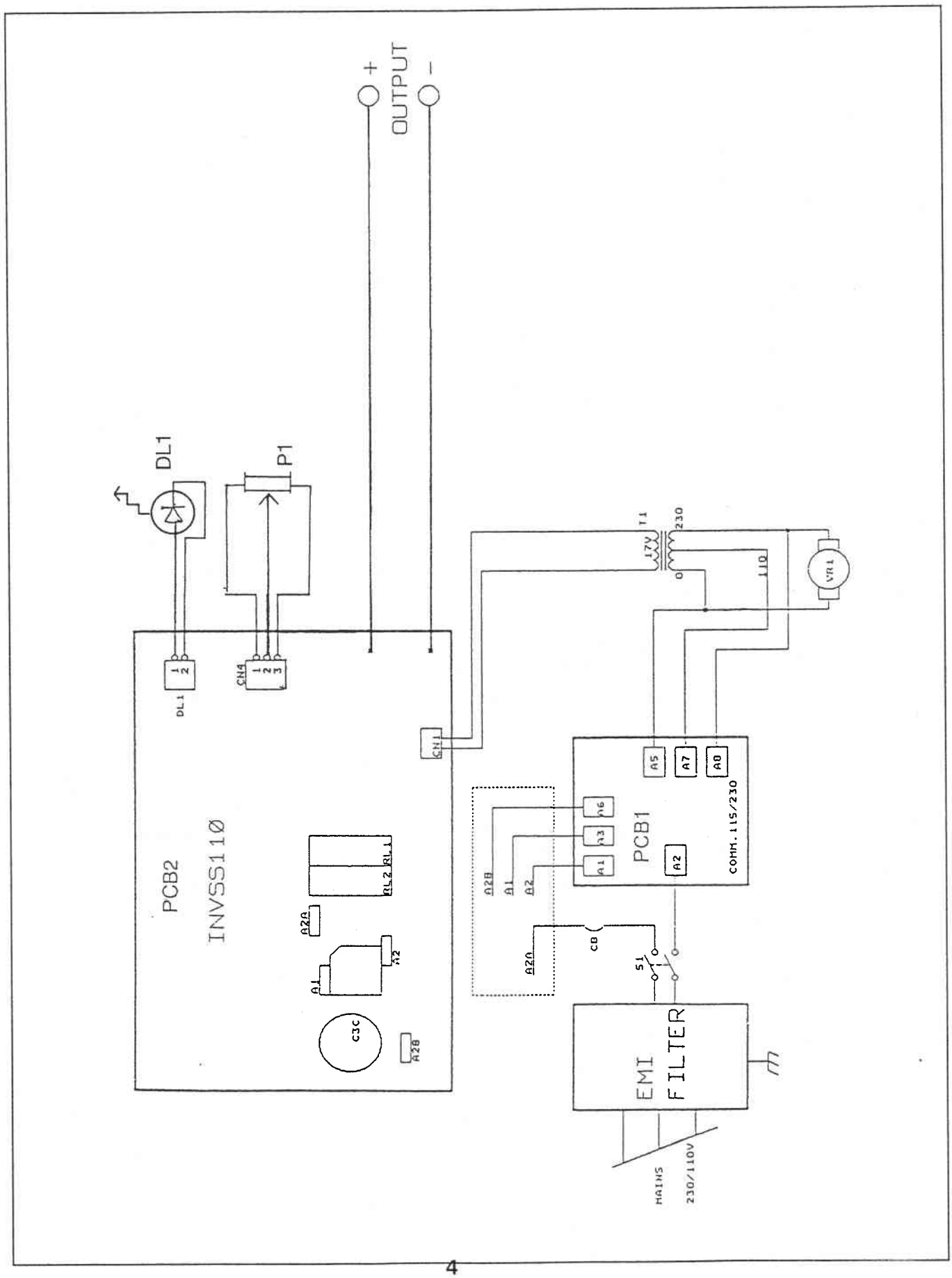
The recommended cross-sectional area of each welding cable should be not less than 15mm². If using welding cables over 5m long, 25mm² cable should be used to prevent voltage losses.

PARTS LIST

	Pt. No.	Description	Cct. Ref.		Pt. No.	Description	Cct. Ref.
1	1415480	Fan	VR1	6	1404314	Dinse Socket	-
2	1415481	EMC Filter	-	7	1415576	Inverter pcb ass'y	PCB2
3	1415485	Power Switch	S1	8	1415492	Voltage autoswitch PCB	PCB1
4	1415482	Yellow LED	DL1	9	1415575	Circuit Breaker 25A	CB
5	1415496	Potentiometer 100k Ω	P1	10	1415495	Control Transformer	T1
-	1415497	Knob for item 5	-				



Circuit Diagram Tradesarc Dual 141i



Tradesarc Dual 141i	FAULT FINDING GUIDE

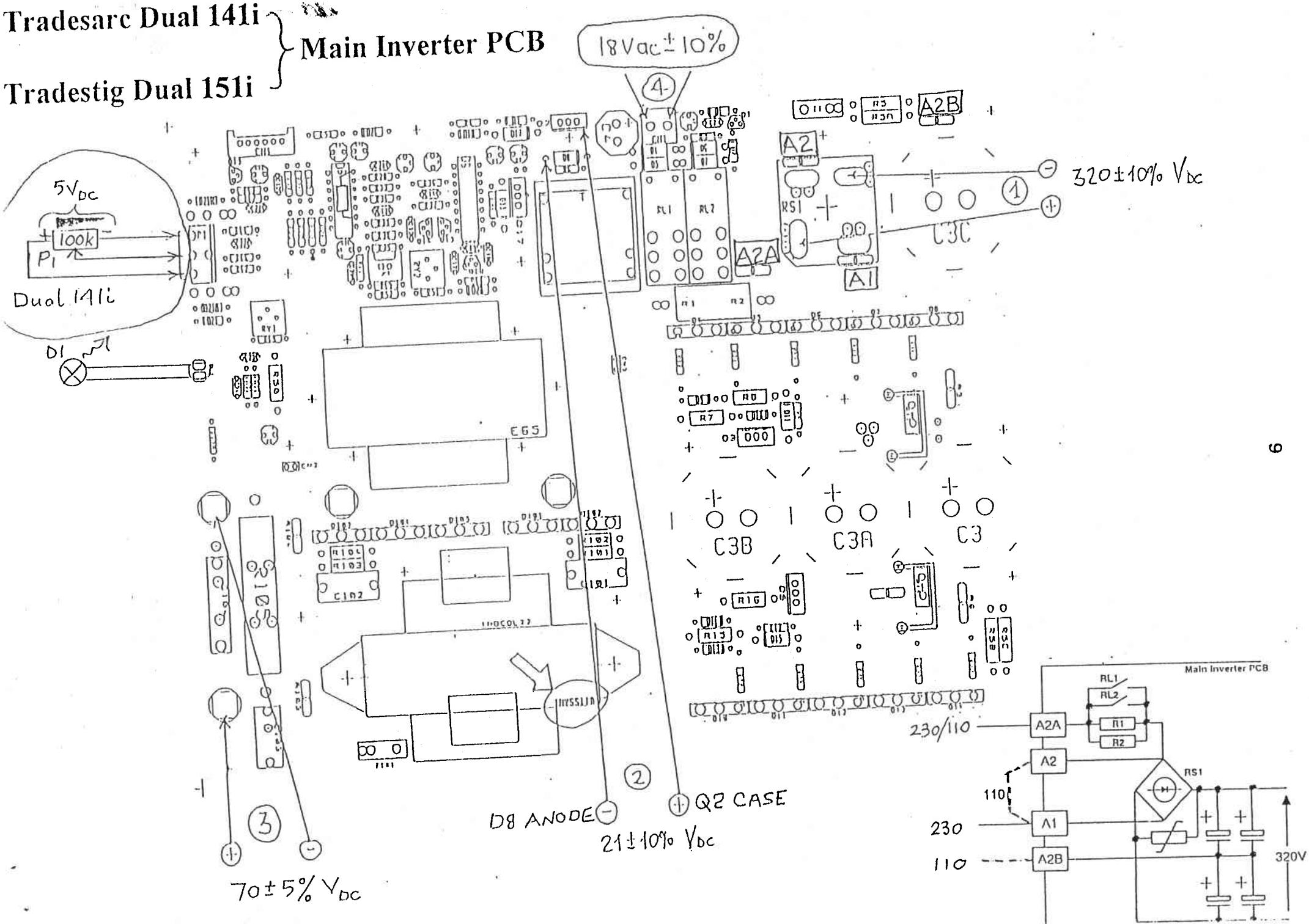
Symptom	Checks (Using 230V supply)
Unit dead, no green pilot light, fan not running, no OCV*	- Mains supply/fuse Remove top cover: - Inspect for signs of obvious damage - Check for 230Vac output from EMI filter - Check for 230Vac output from mains switch
Pilot light is on but fan does not run and there is no OCV*	- Check for 230Vac at fan terminals - Check for 230Vac between connection A2A of main inverter PCB and A2 of autoswitch PCB. If not check 25A Circuit Breaker - Check for 230Vac between A1 and A2 of the autoswitch PCB. If not suspect resistors R1/R2 on main inverter PCB - Check for 230Vac at the auxiliary transformer T1 primary, if not suspect autoswitch PCB
No OCV* but pilot light is on and fan runs	- Check for 320Vdc across dc side of input rectifier bridge RS1 on main inverter PCB - Check 18Vac supply from auxiliary transformer T1
Thermal overload indicator on but unit is cold	- Check thermal switch soldered connections to back of inverter PCB above main output rectifier heatsink
OCV* reduced or welding current unsteady and current control uneven	- Check wiper voltage of current control pot P1** varies smoothly over the range 0-5Vdc w.r.t. the min end of the pot

*OCV should be 70Vdc +- 5%
**100kohm

Tradesarc Dual 141i

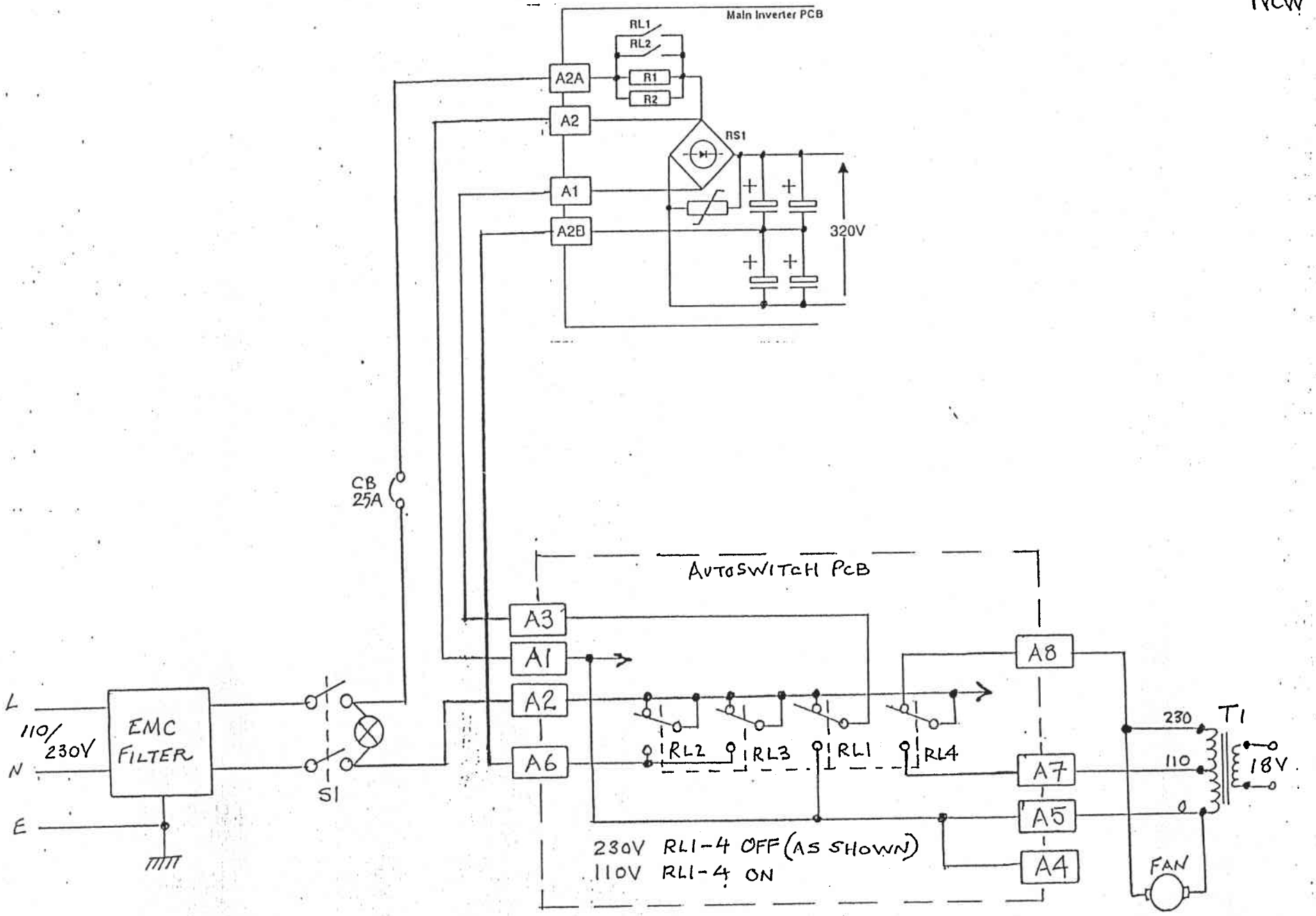
Tradestig Dual 151i

} **Main Inverter PCB**

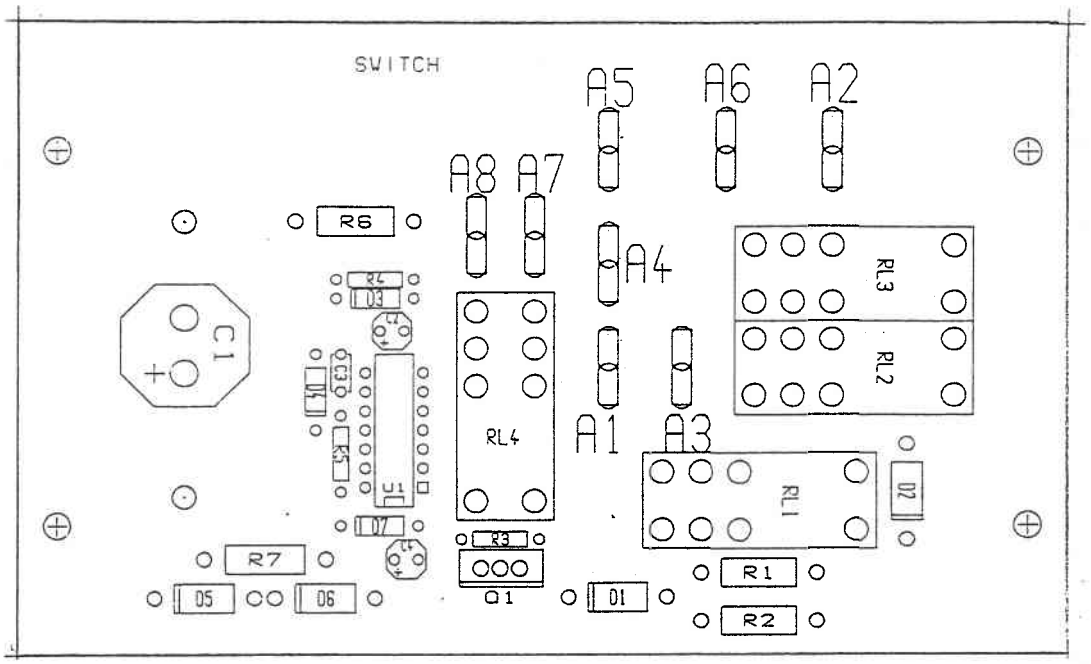


Autoswitch 110/230V PCB Operation
(Tradesarc Dual 141i & Tradestig Dual 151i

9.6.99
RCW



110/230V Autoswitch PCB Layout
(Dual 141i & Dual 151i)



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